Name: _____ Date: _____

A2CC Review for Q1T1

This is review is not comprehensive, be sure to study your notes and homework assignments as well!

1. Which of the following could *not* be the probability that event A occurs?

   (1) $\frac{3}{5}$ (3) 1.25

   (2) 0.49 (4) $\frac{1}{2}$

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2. The following table shows the results of a survey of people in terms of what type of breakfast they prefer. Based on the table, what is the probability that a person picked at random is over 40 and eats eggs for breakfast?

   (1) 0.32 (3) 0.63

   (2) 0.47 (4) 0.82

	Eats Cereal	Eats Eggs
40 and under	23	17
Over 40	21	29

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3. If a standard six sided die is rolled once, what is the probability that the number rolled is either an even or a multiple of 3?

   (1) $\frac{1}{6}$ (3) $\frac{5}{6}$

   (2) $\frac{1}{2}$ (4) $\frac{2}{3}$

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4. Prime numbers are positive integers that are only divisible by 1 and themselves, i.e. the set $\{2, 3, 5, 7, ...\}$. If a random number is generated from 1 to 20, what is the probability that it is *not* prime?

   (1) 0.2 (3) 0.6

   (2) 0.5 (4) 0.8

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5. Of all the tourists who visit Florida, 38% of them will visit an amusement park and 54% will visit a beach. If 22% will visit both an amusement park and a beach, then what percent will visit either a park or a beach?

   (1) 16% (3) 30%

   (2) 70% (4) 92%

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6. If a restaurant is chosen at random in Rhinebeck then there is an 84% chance that it is open on Sunday and a 42% chance that it is open on Monday. If there is a 96% chance it is open on either Sunday or Monday, what is the probability that it is open both days?

(1) 30%
(3) 44%
(2) 38%
(4) 50%

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7. A single standard six-sided die is rolled. What is the probability the roll is a multiple of three given that it is an even number?

(1) $\frac{1}{6}$
(3) $\frac{1}{2}$
(2) $\frac{1}{3}$
(4) $\frac{5}{6}$

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8. The probability on any given work day that Kirk gets less than five hours of sleep the night before and doesn't shave is 0.65. If there is a 0.80 probability on any given day that he doesn't shave and a 0.70 probability he gets less than five hours of sleep, then what is the probability he doesn't shave given that he got less than five hours of sleep?

(1) 0.73
(3) 0.81
(2) 0.78
(4) 0.93

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9. If two events, A and B, are independent then which of the following statements is always true about their probabilities?

(1) $P(\text{A or B}) = P(\text{A}) + P(\text{B})$
(2) $P(\text{A}) + P(\text{B}) = 1$
(3) $P(\text{A and B}) = P(\text{A}) \cdot P(\text{B})$
(4) $P(\text{B}) = \frac{1}{P(\text{A})}$

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10. A die is rolled three times and a curious pattern emerges. On the first roll, the number is greater than 3. On the second roll, the number is greater than 4, and on the third roll, the number is greater than 5. If all three rolls are independent, what is the probability that this occurs?

(1) $\frac{1}{36}$
(3) $\frac{1}{8}$
(2) $\frac{1}{9}$
(4) $\frac{1}{12}$

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Free Response Questions

11. In a local neighborhood, there are nine total children who range in age from three years old to eleven. Their names, genders, and ages are shown below arranged in alphabetical order. Answer the following questions.

Name	Gender	Age
Evie	Girl	7
Elliette	Girl	8
Luca	Boy	6
Max	Boy	11
Niko	Boy	5
Phoebe	Girl	3
Rosie	Girl	7
Zeke	Boy	7
Zoe	Girl	6

(a) If a child is chosen at random, what is the probability they are a girl?

(b) What is the probability that a child chosen at random will have a name beginning with an E given they are a girl?

(c) If a child is chosen at random, what the probability they are either a girl or older than 6?

(d) If a child is chosen at random, is the child being less than 7 independent of the child's gender? Explain how you arrived at your answer.

12. Algernon is running a science fair experiment where mice run through a maze with 4 turns. At each turn, the mouse can take a right or a left. A mouse will find an exit if they either take two rights followed by two lefts or a left followed by two rights and then a left again. Assuming that each turn is independent of all previous ones, what it the probability that a mouse will find an exit. Show how you arrived at your answer.

13. A school system did not use up all of its snow days and will get four of them back as vacation days, either in April or in May. A survey was done amongst the student body to determine the preference for which month to have the days off. The results are presented below arranged by class.

	April	May
9th Grade	166	64
10th Grade	160	96
11th Grade	124	117
12th Grade	88	132

(a) What percent of the students preferred having the days off in April? Round to the nearest percent.

(b) If a student from this survey was chosen at random, what is the probability they would be an upperclassman (11th or 12th) and preferred having days off in May?

(c) If a student is chosen at random, what is the probability that they are a 10th grader given that they preferred to have the days off in April?

(d) Is the preference for the month independent of the grade of the student? Explain how you made your determination.

14. In a survey of 500 high school students, 85% said they liked pizza while 68% said they liked hot dogs and 61% reported liking both. How many students in the survey reported liking neither pizza nor hot dogs? Show how you arrived at your answer.